

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANT: ZHANG, Caiteng

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EXAMINER: Heincer, L. J.

TITLE: A SOLUTION OF METAL-POLYMER CHELATE(S) AND APPLICATIONS
THEREOF

Amendment E: CLAIM AMENDMENTS

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73. (new) A solution of solidified metal-polymer chelates comprising:

0.1 -99.87 percent by weight water;

0.01 - 40 percent by weight of a carboxyl acid;

0.01 to 30 percent by weight of hydroxyl functional carbohydrate polymer;

0.01 to 30 percent by weight of a metal salt;

amino compounds; and

trace amounts of biological proteins, wherein the amino compounds, carbohydrate

polymer, metal and proteins form an amino polymer metal protein hybrid, where the metal ion acts as a bridge between the hydroxyl groups of the carbohydrate polymer and the amino compounds.

74. (new) The solution of metal-polymer chelates of Claim 73, the biological proteins being dissolved with an electric potential suitable for the biological protein.

75. (new) The solution of metal-polymer chelates of Claim 73, the carbohydrate polymer having carbohydrate molecules having at least one nonsaccharide bimolecule of monosaccharide derivatives.

76. (new) The solution of metal-polymer chelates of Claim 73, further comprising;
at least one alkali.

77. (new) The solution of metal-polymer chelates of Claim 73, wherein the metal salts are selected from a group consisting of beryllium, magnesium, calcium, strontium, barium, radium, nickel, chromium, lead, copper, iron, zinc, titanium, manganese, cobalt, silver, gold, platinum, palladium, cadmium, lithium, rubidium, cesium, mercury, tin, zirconium, aluminum, thallium, antimony, bismuth, germanium, gallium, molybdenum, tungsten, yttrium, scandium, rhodium, iridium, technetium, osmium, ruthenium, rhenium, vanadium, and indium.

78. (new) The solution of metal-polymer chelates of Claim 73, wherein the carboxylic acid is selected from a group consisting of monocarboxylic acid, dicarboxylic acid, tricarboxylic acid, acetic acid, L-ascorbate, 2-hydroxybenzoic acid, methanoic acid, propionic acid, propanedioic acid, 2-hydroxypropanoic acid, hydroxybutanedioic acid, butanedioic acid, hexanedioic acid, cis-butendioic acid, trans-butendioic acid, ethanedioic acid, dodecanoic acid, 2,3-dihydrobutanedioic acid, humic acid, nitrified humic acid, fatty acid, opines in a plant, carboxyl acid fiber, and carboxyl resin.

79. (new) The solution of metal-polymer chelates of Claim 73, wherein the hydroxyl groups are selected from a group consisting of sucrose, maltose, lactose, trehalose, disaccharide molecules, monosaccharide molecules, chitosan, degraded oils, seaweed cell wall (without adding a metal salt), unhusked rice (without adding a metal salt), cytokinin-O-glucosides, amino group containing polyvinyl alcohol, polyvinyl alcohol, humic acid, nitrified humic acid, peat, hydroxypropylmethyl cellulose, and a mixture of oil and sugar.

80. (new) The solution of metal-polymer chelates of Claim 73, wherein the biological proteins are selected from a group consisting of a protein enzyme, a bacterium, and a cell.

81. (new) The solution of metal-polymer chelates of Claim 73, further comprising a silicic acid bearing molecule.

82. (new) The solution of metal-polymer chelates of Claim 73, further comprising:
a clay.

83. (new) The solution of metal-polymer chelates of Claim 73, further comprising a plastic polymer.

84. (new) The solution of metal-polymer chelates of Claim 73, in which the solution is used in an oxidation process so as to produce oxygen anions.

85. (new) The solution of metal-polymer chelates of Claim 73, in which the solution is used for a condensation having at least one oxidizing condensation.

86. (new) The solution of metal-polymer chelates of Claim 73, in which the solution is used in one of a hydroxypropylmethyl cellulose mimic of chitosan and a monosaccharide mimic of glucosamine.

87. (new) The solution of metal-polymer chelates of Claim 73, in which the solution is used

in the cultivation and purification of the biological protein bearing biological molecules and their metabolites.

88. (new) The solution of metal-polymer chelates of Claim 73, in which the solution is used in a metal enzyme biocatalyst.

89. (new) The solution of metal-polymer chelates of Claim 73, in which the solution is used in a disinfectant.

90. (new) The solution of metal-polymer chelates of Claim 73, in which the solution is used in a biological protein bearing biological molecules culture medium preservation system.

91. (new) The solution of metal-polymer chelates of Claim 73, in which the solution is used for dietary treatments and for health care applications.

92. (new) The solution of metal-polymer chelates of Claim 73, in which the solution is used for the production of chemical components of a plant.

93. (new) The solution of metal-polymer chelates of Claim 73, in which the solution is used for duplication of genes and carriers.

94. (new) The solution of metal-polymer chelates of Claim 73, in which the solution is used in a nano filtration system.

95. (new) The solution of metal-polymer chelates of Claim 73, in which the solution is used for the production of a nano material.

96. (new) The solution of metal-polymer chelates of Claim 73, in which the solution is used for one of the nano inorganic matter and nano ceramic and nano plastic and nano textile industries.

97. (new) The solution of metal-polymer chelates of Claim 73, in which the solution is used in one of the manufacture of biological liquid crystals and biological semiconductors and biochips.

98. (new) The solution of metal-polymer chelates of Claim 73, in which the solution is used for biological batteries.

99. (new) The solution of metal-polymer chelates of Claim 73, in which the solution is used for processing an oil product having at least one solvent liquid.

100. (New) The solution of metal-polymer chelates of Claim 73, the metal-polymer chelates being selected from a group consisting of: polymer bridging agent, inorganic polymer carrier, inorganic and organic bridge polymer, nano inorganic polymer, plant fiber, carboxyl acid fiber, modification having carboxyl acid fiber, carboxyl resin, amino resin, inorganic matter, polylysine, and aminosilane.

101. (New) The solution of metal-polymer chelates of Claim 73, wherein the solution of metal-polymer chelates further comprising a moisture absorbent combined with the metal-polymer chelates.

102. (New) The solution of metal-polymer chelates of Claim 100, the polymer bridging agent being a monosaccharide having linear polymers or polyvinylpyrrolidone.

103. (New) The solution of metal-polymer chelates of Claim 100, wherein the metal-polymer chelates produce at least one substance, the substance being selected from the group consisting of: amino metal compound, an amino metal polymer, an amino nano metal polymer, an amino nano metal compound, a nano metal polymer, a nano metal compound, an amino biological protein bearing biological molecules, and a pure biological protein bearing biological molecules.